

424 Rec'd PCT/PTO 18 AUG 2000

FORM PTO-1390 (REV 12-29-99)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER VAL-489-A
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (If known, use 37 CFR 1.52) <b>09/622525</b>
INTERNATIONAL APPLICATION NO. PCT/EP99/01020	INTERNATIONAL FILING DATE 18 February 1999	PRIORITY DATE CLAIMED 21 February 1998	
TITLE OF INVENTION ROTATION ANGLE MEASURING DEVICE WITH MAGNETISED COMMUTATOR			
APPLICANT(S) FOR DO/EO/US Udo Baumeister, Ronald Frey, Eberhard Hogler, Peter Andres			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</li> <li>4. <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). <b>Unsigned Copy</b></li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>			
<b>Items 11. to 16. below concern document(s) or information included:</b>			
<ol style="list-style-type: none"> <li>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>13. <input type="checkbox"/> A <b>FIRST</b> preliminary amendment. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>14. <input type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input type="checkbox"/> Other items or information:</li> </ol>			

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U.S. APPLICATION NO. (if known) 37 CFR 1.3		PCT/EP99/01020		INTERNATIONAL APPLICATION NO.		18 February 1999		ATTORNEY'S DOCKET NUMBER		VAL-489-A	
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**17. ☒ The following fees are submitted:**

**BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)) :**

- Neither international preliminary examination fee (37 CFR 1.482)
- nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
- and International Search Report not prepared by the EPO or JPO ..... \$970.00
- International preliminary examination fee (37 CFR 1.482) not paid to
- USPTO but International Search Report prepared by the EPO or JPO..... \$840.00
- International preliminary examination fee (37 CFR 1.482) not paid to USPTO but
- international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$690.00
- International preliminary examination fee paid to USPTO (37 CFR 1.482)
- but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$670.00
- International preliminary examination fee paid to USPTO (37 CFR 1.482)
- and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$96.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	\$	840
	\$	130

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	- 20 =		X \$18.00
Independent claims	- 3 =		X \$78.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>			\$ 970
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).			\$ 0
<b>SUBTOTAL =</b>			\$ 970
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			\$ 130
<b>TOTAL NATIONAL FEE =</b>			\$ 1,100
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +			\$ 0
<b>TOTAL FEES ENCLOSED =</b>			\$ 1,100

	Amount to be:	\$
	refunded	
	charged	\$

a. ☒ A check in the amount of \$ 1,100.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$\_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 25-0113. A duplicate copy of this sheet is enclosed.


**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Andrew R. Basile  
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 SIGNATURE:  
William M. Hanlon, Jr.  
 NAME  
28422  
 REGISTRATION NUMBER

Our Reference: VAL-489-A

09/622,525  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Udo Baumeister et al  
Serial Number: 09/622,525  
Filing Date: August 18, 2000  
Examiner/Art Group Unit: Unknown/Unknown  
Title: ROTATION ANGLE MEASURING DEVICE  
WITH MAGNETIC COMMUTATOR

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

Entry of this Preliminary Amendment and further examination of the above-identified application is respectfully requested.

In the specification:

After the claims, start a new page:

--ABSTRACT

The invention relates to a rotation angle measuring device for an electrical machine. To provide a simple and compact measuring device of this kind, the invention provides for the commutator of the machine to be magnetized and for the magnetic field which rotates with the commutator to be evaluated by means of a suitable sensor. Advantageous improvements relate to a suitable structure for the commutator.--.

In the Claims:

- 1 1. (Amended) [Device] A device for measuring the angle of
- 2 rotation for an electrical machine equipped with a commutator [(1)] , in which [the]
- 3 segments [(2)] of the commutator [(1)] are formed of an electrically conductive
- 4 material penetrable by a magnetic field[, especially of copper], characterized in that a
- 5 basic body [(3)] of the commutator [(1)] bearing the segments [(2)] is permanently

6 magnetized, at least sectionally, and that the stator of the machine is equipped with  
7 sensors [(8; 9)] responding to the rotary status of the commutator [(1)].

1 2. (Amended) [Device] The device for measuring the angle of  
2 rotation according to Claim 1, characterized in that the sensor [(8; 9)] has at least one  
3 Hall element, which is penetrable by the magnetic field of the commutator [(1)].

1 3. (Amended) [Device] The device for measuring the angle of  
2 rotation according to [one of the preceding claims] claim 1, characterized in that the  
3 basic body [(3)] is made of an electrically conductive material permeable to a  
4 magnetic field.

1 4. (Amended) [Device] The device for measuring the angle of  
2 rotation according to Claim 3, characterized in that the basic body [(3)] is made of  
3 plastic.

1 5. (Amended) [Device] The device for measuring the angle of  
2 rotation according to [one of the preceding claims] claim 1, characterized in that the  
3 basic body [(3)] has at least one recess [(5)], into which a prefabricated magnet[,  
4 especially an annular magnet (4) or a magnetic segment (6),] is fitted.

1 6. (Amended) [Device] The device for measuring the angle of  
2 rotation according to [one of the preceding claims] claim 1, characterized in that the  
3 basic body [(3) essentially consists] is formed of a magnet made of electrically  
4 insulating and magnetizable material.

1 7. (Amended) [Device] The device for measuring the angle of  
2 rotation according to Claim 5, characterized in that the magnet of the basic body [(3)]  
3 is molded.

1                   8.       (Amended) [Device] The device for measuring the angle of  
2 rotation according to Claim 5, characterized in that the magnet of the basic body (3) is  
3 sintered.

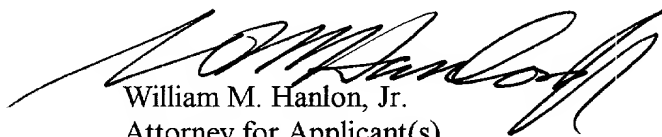
REMARKS

After entry of this amendment, claims 1 - 8 are pending in the application.

A hand-written, corrected copy of the specification is enclosed showing the changes which have been made to the specification as required by Section 608.01(Q) and 714.20(1) of the Manual of Patent Examining Procedure. The Substitute Specification filed herewith has been amended to utilize idiomatic English, correct minor typographical and grammatical errors and to conform the application to current United States Patent practice. The Substitute Specification includes no new subject matter; but does include the same changes handwritten in red in the attached, corrected, original specification. Entry of the Substitute Specification is respectfully requested.

Respectfully submitted,

YOUNG, BASILE, HANLON, MacFARLANE, WOOD  
& HELMHOLDT, P.C.



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Dated: November 15, 2000  
WMH/dge

**SUBSTITUTE SPECIFICATION**

Our Reference: VAL-489-A

**PATENT****ROTATION ANGLE MEASURING DEVICE  
WITH MAGNETIZED COMMUTATOR****BACKGROUND**

5           The invention pertains to a device for measuring the angle of rotation or a value derived therefrom in an electrical machine equipped with a commutator. This machine can be a motor or a dynamo or generator. Essential for the invention is that a commutator is provided that equipped in a known manner with electrically conductive contacts, via which currents are conducted in temporal sequence that produce a more or less constantly alternating field. Conversely, in the case of a dynamo, the commutator can receive the generated current. The invention can also be used with annular sliding contacts.

10           It is often desirable to determine the rotary status of the rotor or an angular value for the rotor of an electrical machine, derived therefrom without regard as to whether the machine is operated in generator or motor mode. To this end, it is known from DE-OS 41 03 561 that the shaft of a motor can be connected to magnets, with Hall elements provided in the stator associated with these magnets. In DE-OS 35 39 390, magnets are mounted on the shaft of a tachogenerator, the rotary status of which is scanned by an inductive sensor, while a commutator is axially offset on the shaft (see Figure 1.)

15           Since the space available in small motors is often very limited, the objective is to integrate the rotary angle measurement device into other components of the electrical machine whenever possible.

**SUMMARY**

25           Accordingly, the invention is based on a rotary angle measurement device. In realization of the objective, the invention proposes that the segmented basic body of the commutator be permanently magnetized, at least sectionally, and that the stator of the machine be equipped with a sensor responding to the rotary status of the commutator.

30           Therefore, the invention consists principally in utilizing the fact that the basic body of a commutator is fully capable of being magnetized without impairment

5 of the primary function of the commutator, namely providing contact of its segments with the contact brushes.

It follows according to the invention that it is readily possible, in addition to the task of current conductivity, to integrate into the commutator the additional formation of a rotating magnetic field.

10 Inasmuch as a rotating magnetic field is already present in most electric machines, it is theoretically possible to make do without a magnetic field specially integrated into the commutator. However, the magnetic field specially integrated into the commutator is particularly capable of providing a field strength sufficient to activate a Hall element, whereby the Hall element could be located in the stator in the vicinity of the commutator. Of course, a better rotating field measurement can be achieved with several Hall elements. The invention is not limited to the following embodiments. With the measurement device according to the invention, the rotary speed, the rotary acceleration or any other value of the rotor derivable from its rotary status can also be determined.

20 The segments of the commutator themselves must not be electrically connected via the commutator. This can be realized by enclosing the individual segments in an insulating layer. However, an advantageous modification of the invention is recommended, according to which the basic body consists of an insulating material that is nevertheless so configured that it permits the magnetic flux to pass through the basic body. The basic body preferably consists of plastic. For the positioning of one or more magnets inside the basic body in the commutator in advantageous refinement, a series of measures are available. To this end, at least one prefabricated magnet be fitted into an appropriate recess in the commutator.

25 However, the basic body can also be molded from a magnetizable, electrically nonconductive material and then permanently magnetized or subjected to a magnetization during the molding process. It is alternatively proposed that the basic body consist of a sintered magnet subjected to a magnetization during or after the sintering process.

30 The special advantage of the invention lies in the fact that the sensor, especially a Hall sensor, can lie in the same plane as the carbon brushes. This facilitates

35

shortening the length of the motor. The sensors can also be spatially separated farther from the interference suppressors located on the rear end shield of the motor. In this manner, the sensors are rendered less subject to the influence of the suppressors.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

Several preferential embodiments of the present invention are described in greater detail below, with references to the appended drawings. The drawings depict:

Figure 1 is a longitudinal cross section view of a commutator of an electrical machine with a device for measuring the angle of rotation according to the invention;

Figure 2 is a cross section view of the commutator from Figure 1 in a first embodiment of the invention;

Figure 3 is a cross section view of the commutator from Figure 1 in a second embodiment of the invention; and

Figure 4 is a longitudinal cross section of a commutator of an electrical machine with a device for measuring the angle of rotation according to a third embodiment of the invention.

### **DETAILED DESCRIPTION**

Shown in Figure 1 is a commutator of an electrical machine. The electrical machine can be a motor or a dynamo (generator). In the case of a motor, the commutator 1 is equipped with electrically conductive contacts in the form of segments 2, via which currents are directed in temporal sequence to one or more rotor coils that produce a more or less constantly alternating magnetic field. Conversely, in the case of a dynamo, the commutator 1 can serve to receive the generated current.

The segments 2 of the commutator 1 consist of an electrically conductive material penetrable by a magnetic field, copper in the present embodiment. The commutator 1 has a basic body 3 bearing the segments 2. The basic body 3 consists of an electrically insulating material that nevertheless permits magnetic flux to pass through the basic body 3 itself. In the case of the embodiments shown in Figures 1-3, the basic body 3 is made of plastic.



5           The basic body 3 is sectionally magnetized. The sectional magnetization  
of the basic body 3 can be accomplished in various ways. In the case of the  
embodiments in Figures 1 and 2, an annular recess 5 is formed in the plastic basic body  
3 of the commutator 1, into which an annular magnet 4 is fitted. In the embodiment in  
10       Figure 3, segmented recesses 5 are formed in the plastic basic body 3, into which  
prefabricated magnetic segments 6 are fitted. Finally, in the embodiment shown in  
Figure 4, the entire basic body 3 consists of a magnet made of electrically insulating  
and magnetizable material. The magnet of the basic body 3 is, for example, molded or  
sintered. During or following the molding process or sintering process, the magnet is  
sectionally or completely magnetized. In the case of the embodiment depicted here, the  
15       magnetized sections 7 of the basic body 3 are identified.

          Located on the stator of the electrical machine are suitable sensors 8, 9,  
by means of which, in case of a rotary movement of the commutator 1, the rotary  
status of the commutator 1 or the rotor of the electrical machine is determined from  
the rotating magnetic field of the magnetized sections 4, 6, 7 of the basic body 3. In  
20       the embodiments shown in Figures 1-4, the sensors 8, 9 are designed as Hall sensors.  
Scanning of the magnetic field is accomplished in the radial direction by sensor 8 and  
in the axial direction by sensor 9. It is feasible to equip the stator with several sensors  
8, 9 with the same or different scanning directions. The magnetized sections 4, 6, 7 of  
the basic body 3 must be magnetized in agreement with the scanning direction of the  
25       sensors 8, 9 used.

          In addition to the rotary status of the motor, it is also possible, with the  
device for measuring the angle of rotation according to the invention, to determine the  
rotary speed, the rotary acceleration or another value of the rotor derived from the  
rotary status. The advantage of the invention lies particularly in the fact that the  
30       sensors 8, 9 can lie in the same plane as the carbon brushes of the electrical machine.  
The constructive length of the electrical machine can be shortened thereby. Similarly,  
the sensors 8, 9 can be spatially separated farther from the interference suppressors  
located on the rear end shield of the motor. In this manner, the sensors 8, 9 are  
rendered less subject to interference from the suppressors.

What is Claimed Is:

1                   1.     Device for measuring the angle of rotation for an electrical  
2 machine equipped with a commutator (1), in which the segments (2) of the  
3 commutator (1) are formed of an electrically conductive material penetrable by a  
4 magnetic field, especially of copper, characterized in that a basic body (3) of the  
5 commutator (1) bearing the segments (2) is permanently magnetized at least  
6 sectionally, and that the stator of the machine is equipped with sensors (8; 9)  
7 responding to the rotary status of the commutator (1).

1                   2.     Device for measuring the angle of rotation according to Claim 1,  
2 characterized in that the sensor (8; 9) has at least one Hall element, which is penetrable  
3 by the magnetic field of the commutator (1).

1                   3.     Device for measuring the angle of rotation according to one of  
2 the preceding claims, characterized in that the basic body (3) is made of an electrically  
3 conductive material permeable to a magnetic field.

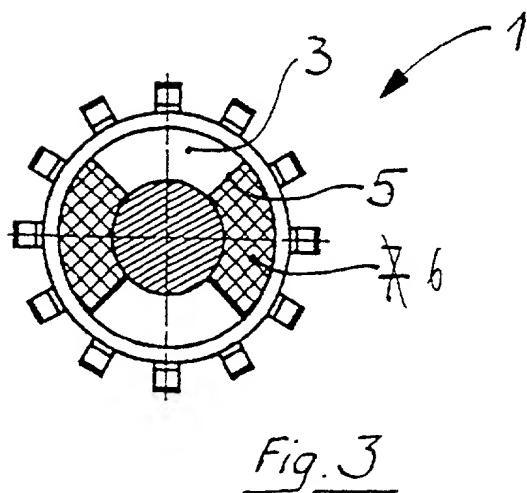
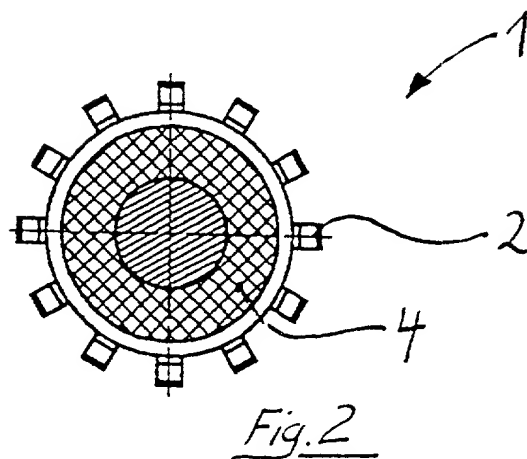
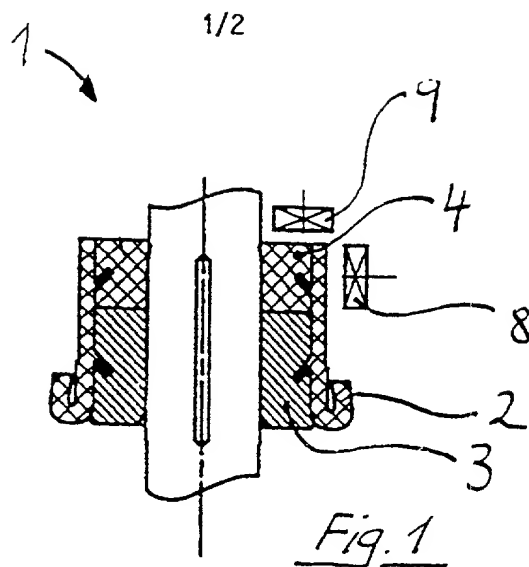
1                   4.     Device for measuring the angle of rotation according to Claim 3,  
2 characterized in that the basic body (3) is made of plastic.

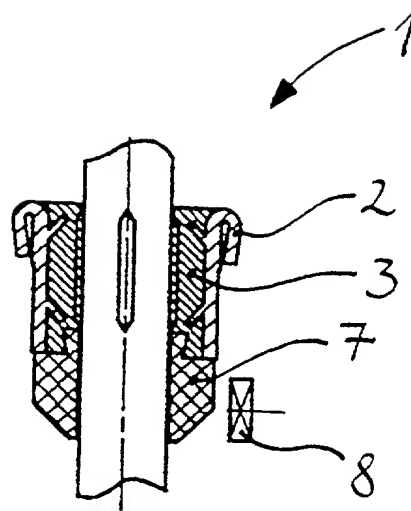
1                   5.     Device for measuring the angle of rotation according to one of the  
2 preceding claims, characterized in that the basic body (3) has at least one recess (5),  
3 into which a prefabricated magnet, especially an annular magnet (4) or a magnetic  
4 segment (6), is fitted.

1                   6.     Device for measuring the angle of rotation according to one of  
2 the preceding claims, characterized in that the basic body (3) essentially consists of a  
3 magnet made of electrically insulating and magnetizable material.

1                   7.     Device for measuring the angle of rotation according to  
2 Claim 5, characterized in that the magnet of the basic body (3) is molded.

8. Device for measuring the angle of rotation according to Claim 5, characterized in that the magnet of the basic body (3) is sintered.



Fig. 4

3826 613

09/622525  
27 NOV 2000

# Declaration and Power of Attorney for Patent Application Erklärung für Patentanmeldungen mit Vollmacht

## German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:

Drehwinkelmeßeinrichtung  
Mit Magnetisiertem Kommutator

deren Beschreibung hier beigelegt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

☐ wurde angemeldet am \_\_\_\_\_  
unter der US-Anmeldenummer oder unter der  
Internationalen Anmeldenummer im Rahmen des  
Vertrags über die Zusammenarbeit auf dem Gebiet  
des Patentwesens (PCT)  
☐ und am \_\_\_\_\_  
abgeändert (falls  
zutreffend).

Ich bestätige hiermit, daß ich den Inhalt der oben angegebenen Patentanmeldung, einschließlich der Ansprüche, die eventuell durch einen oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und verstanden habe.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Rotation Angle Measuring Device  
with Magnetized Commutator

the specification of which is attached hereto unless the following box is checked:

☒ was filed on 18 February 1999  
as United States Application Number or PCT  
International Application Number PCT/EP99  
01020 and was amended on  
\_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

### German Language Declaration

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title 35, US-Code, § 119 (a)-(d), bzw. § 365(b) aller unten aufgeführten Auslandsanmeldungen für Patente oder Erfinderurkunden, oder § 365(a) aller PCT internationalen Anmeldungen, welche wenigstens ein Land ausser den Vereinigten Staaten von Amerika benennen, und habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen für Patente bzw. Erfinderurkunden oder PCT internationale Anmeldungen angegeben, deren Anmeldetag dem der Anmeldung, für welche Priorität beansprucht wird, vorangeht.

Prior Foreign Applications  
(Frühere ausländische Anmeldungen)

198 11 424.9 DE  
(Number) (Country)  
(Nummer) (Land)

(Number) (Country)  
(Nummer) (Land)

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

(Application No.) (Filing Date)  
(Aktenzeichen) (Anmeldetag)

(Application No.) (Filing Date)  
(Aktenzeichen) (Anmeldetag)

Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zustehenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

(Application No.) (Filing Date)  
(Aktenzeichen) (Anmeldetag)

(Application No.) (Filing Date)  
(Aktenzeichen) (Anmeldetag)

Ich erkläre hiermit, daß alle in der vorliegenden Erklärung von mir gemachten Angaben nach bestem Wissen und Gewissen der Wahrheit entsprechen, und ferner daß ich diese eidesstattliche Erklärung in Kenntnis dessen ablege, daß wissentlich und vorsätzlich falsche Angaben oder dergleichen gemäß § 1001, Title 18 des US-Code strafbar sind und mit Geldstrafe und/oder Gefängnis bestraft werden können und daß derartige wissentlich und vorsätzlich falsche Angaben die Rechtswirksamkeit der vorliegenden Patentanmeldung oder eines aufgrund deren erteilten Patentes gefährden können.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed  
Priorität nicht beansprucht

21 February 1998  
(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung) ☐

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung) ☐

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

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(Supply similar information and signature for third and subsequent joint inventors.)



# SUPPLEMENTAL INVENTOR(S)

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P. Andres